

Extreme Weather

Notes

Learning Objective: In writing, SWBAT explain how a thunderstorm forms, and describe the characteristics of a thunderstorm using academic language.

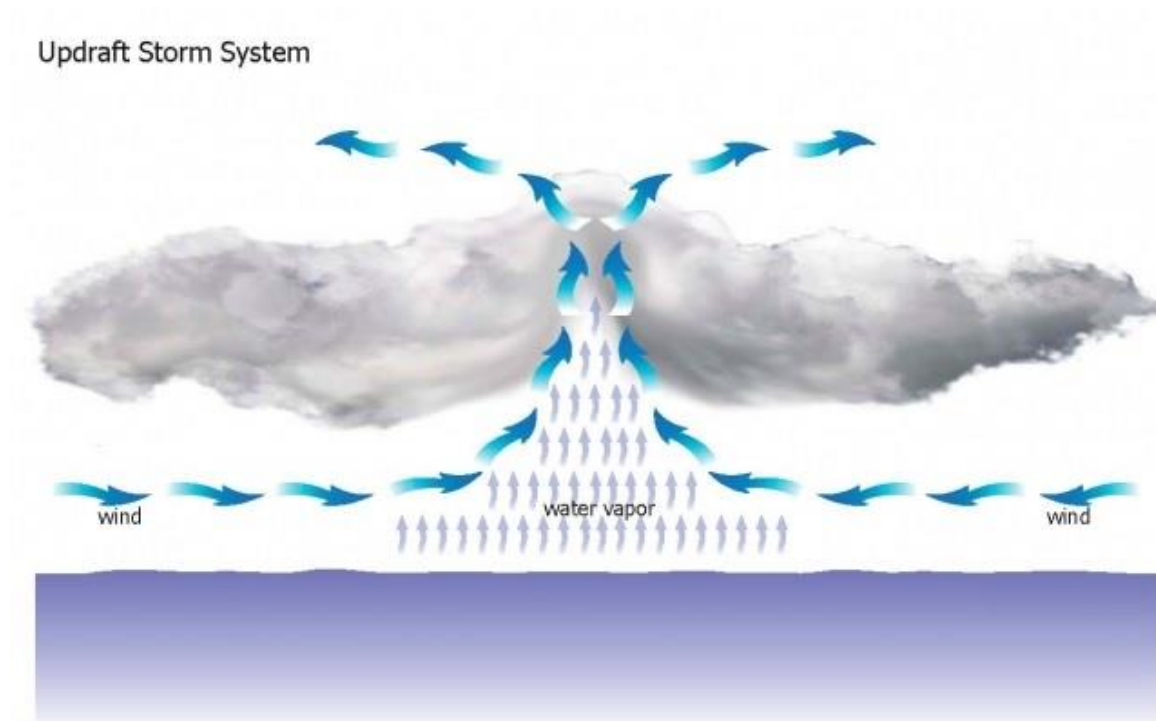
<https://www.brainpop.com/science/weather/weather/>

Thunderstorm

a storm with thunder and lightning and a lot of heavy rain

Updraft

a rising stream of warm air



Updrafts often create cumulus clouds

Water vapor

water in the form of a gas

How thunderstorms form

warm, moist air rises quickly into the atmosphere in an updraft

The warm, moist air meets cold air

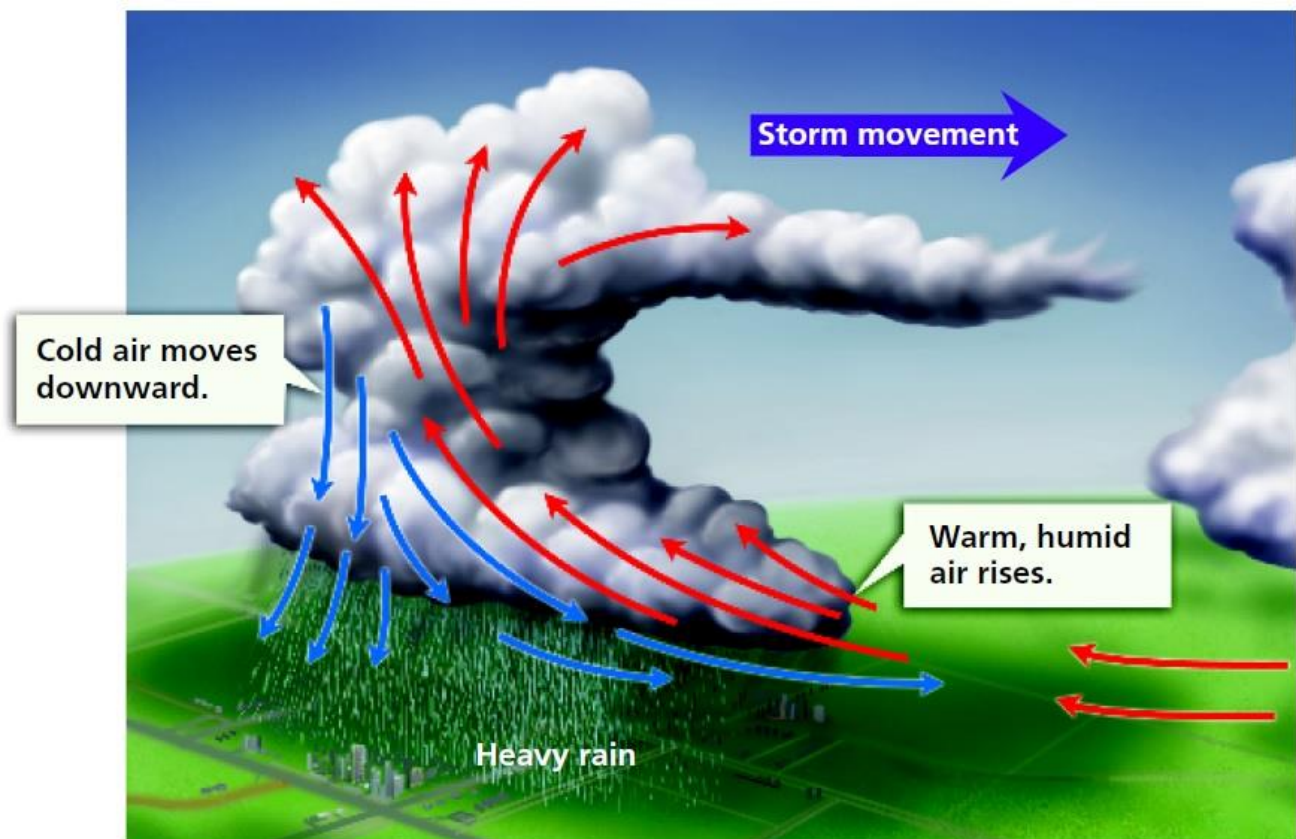
The warm air cools and forms a large cumulonimbus cloud

Heavy rain or hail falls from the cumulonimbus clouds

Cumulonimbus clouds

produce heavy rain and sometimes hail

They also produce lightning and thunder



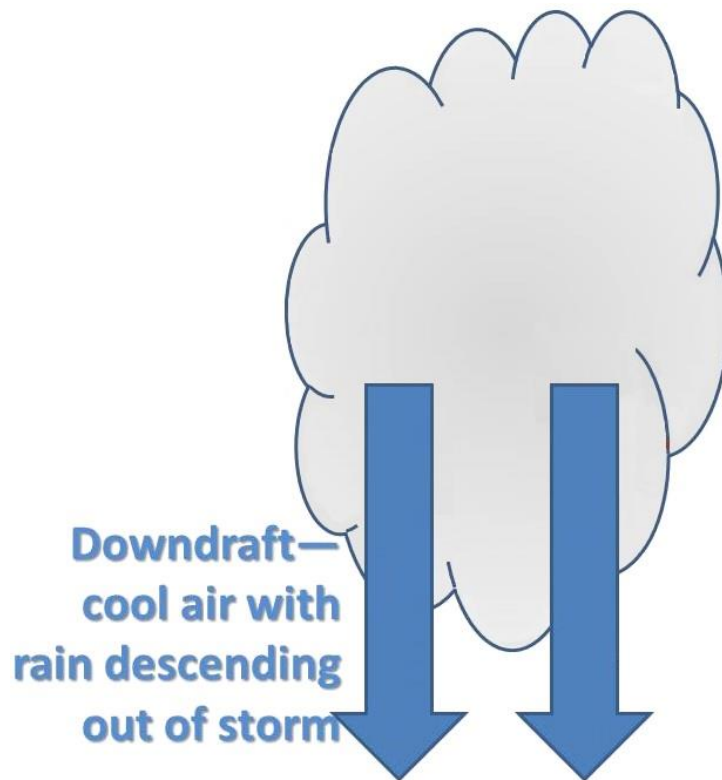
<https://www.youtube.com/watch?v=exlVSEPEXKc>

<https://www.brainpop.com/science/forcesofnature/thunderstorms/>

Downdraft

a downward flow of cool air

Downdrafts usually come with rain



Flood

a large amount of water that covers an area

Lightning

very bright flashes of light in the sky that happen during thunderstorms

Lightning can damage property and start forest fires

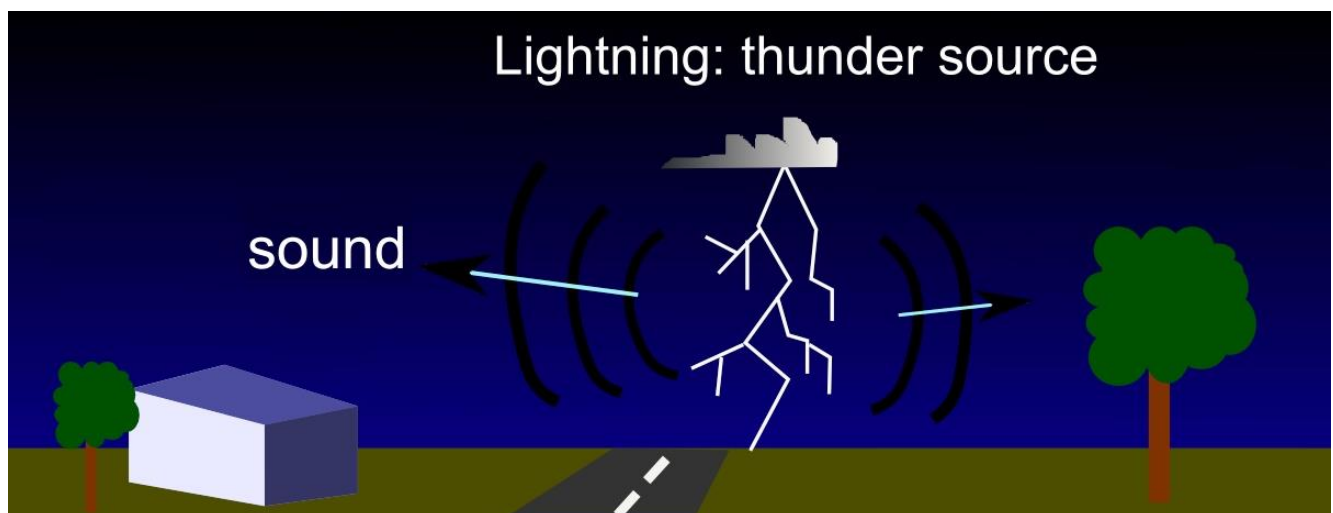
It can also injure and kill people

How thunder forms

lightning heats the air around it very quickly

This rapidly heated air expands suddenly and explosively

The sound of the explosion is thunder



Learning Objective: **In writing, SWBAT describe how a tornado forms, and explain why tornadoes are dangerous, using academic language.**

Tornado

a violent storm made of a funnel of air that spins very fast

Characteristics of tornadoes

- they can have wind speeds of over 500 km/h
- can cause a lot of damage
- usually form over land
- most form in spring or early summer
- last for a very short time

How tornadoes form

tornadoes usually form in huge thunderstorms with strong rotating winds

Part of the storm hangs below the main cloud and stretches toward the ground



Wall cloud

part of a cloud in a thunderstorm that stretches to the ground

A funnel cloud sometimes forms from the wall cloud



Funnel cloud

a rotating column of air below a cumulonimbus cloud

When the funnel cloud touches the ground, it is called a tornado



<http://news.bbc.co.uk/2/hi/5328524.stm>

<http://news.bbc.co.uk/2/hi/science/nature/7533941.stm>

Waterspout

a small tornado that forms over water



<https://www.brainpop.com/science/forcesofnature/tornadoes/>

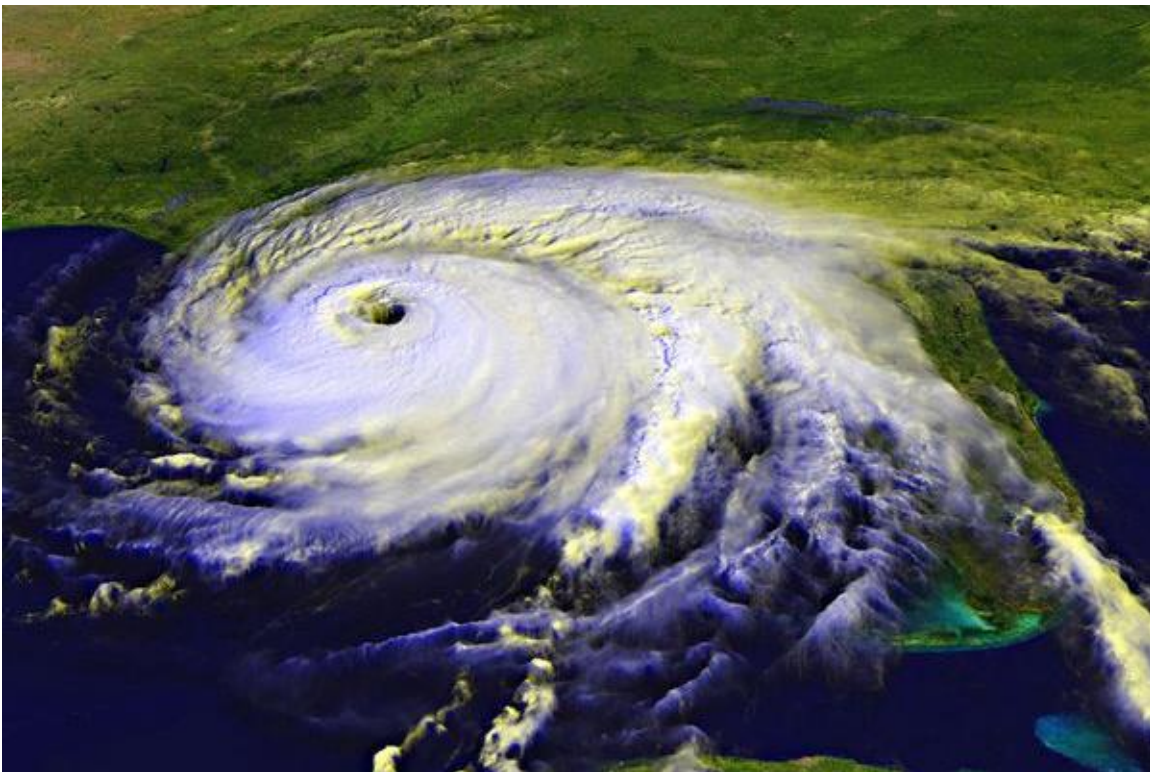
Tornado safety

- move to a safe area, such as a basement
- stay away from windows and doors
- lie on the floor under a piece of heavy furniture
- if you are outside, move to a building or lie flat in a ditch

Learning Objective: In writing, SWBAT describe a hurricane forms, and its characteristics, using academic language.

Hurricane

a very large rotating storm that forms over the warm ocean water



Characteristics
of hurricanes

- are much larger than tornadoes
- can cause great damage
- the most powerful type of storm
- last 7 or more days
- average 600 km in diameter

<https://www.brainpop.com/science/forcesofnature/hurricanes/>

Severe Weather

Check Your Understanding

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1. What is the name for the center of a hurricane?

The name for the center of a hurricane is the _____ .

2. Where do tornadoes form?

Tornadoes form in _____ .

3. How does a thunderstorm form?

A thunderstorm forms when _____ .

4. How are tornadoes and hurricanes similar? How are they different?

Tornadoes and hurricanes are similar because they are both _____ .
They are different because hurricanes are _____ tornadoes.

Extreme Weather Science Skill

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1. In the model, what kind of cloud is the funnel cloud a part of?

In the model, the funnel cloud is part of a _____ cloud.

2. Is the funnel cloud in the model a tornado? How do you know?

The funnel cloud in the model _____ a funnel cloud because _____ .

Learning Objective:

In writing, SWBAT explain how a hurricane forms, and detail the stages of a hurricane, using academic language.

How a hurricane forms

it begins over warm water in a low-pressure area

Warm, moist air rises and forms clouds

This air is pulled in to the system

The system begins to spin and grow larger and stronger

<https://www.youtube.com/watch?v=zP4rgvu4xDE>

<http://news.bbc.co.uk/2/hi/science/nature/7533909.stm>

Stages of a hurricane

1. tropical disturbance
2. tropical depression
3. tropical storm
4. hurricane

Tropical disturbance

a group of thunderstorms over the ocean

It lasts for more than 24 hours

Tropical depression

a group of thunderstorms that begins to rotate

Wind speeds are less than/below 62 km/h

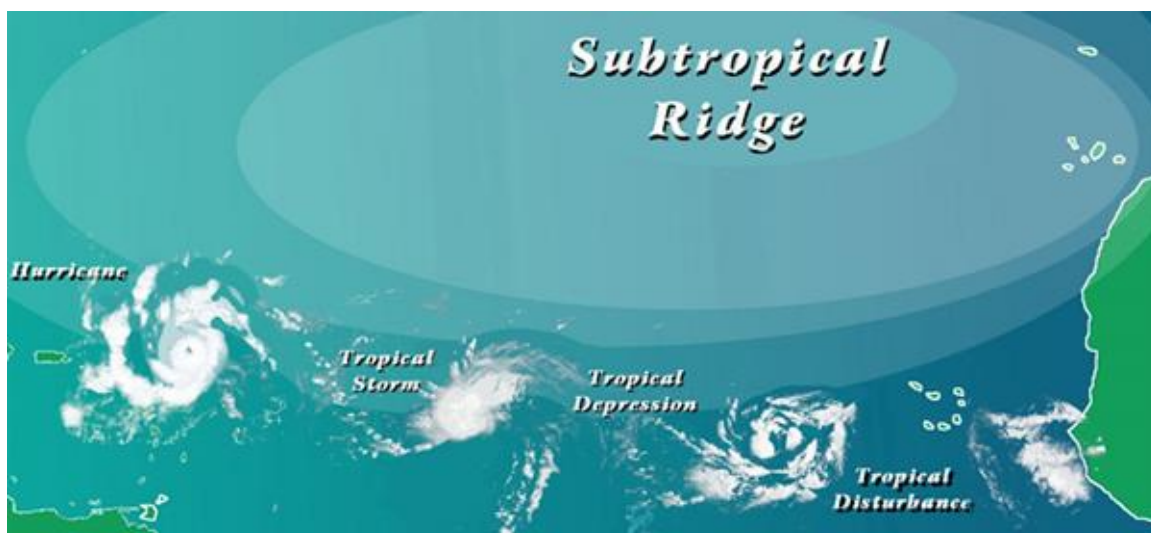
Tropical storm

a storm with winds between 62 and 117 km/h

Hurricane

has winds of at least 117 km/h

The storm rotates, and an eye forms



Hurricanes have high winds, huge amounts of rain, and high waves

http://www.classzone.com/books/earth_science/terc/content/visualizations/es2008/es2008page01.cfm?chapter_no=visualization

<http://news.bbc.co.uk/2/hi/science/nature/7533909.stm>

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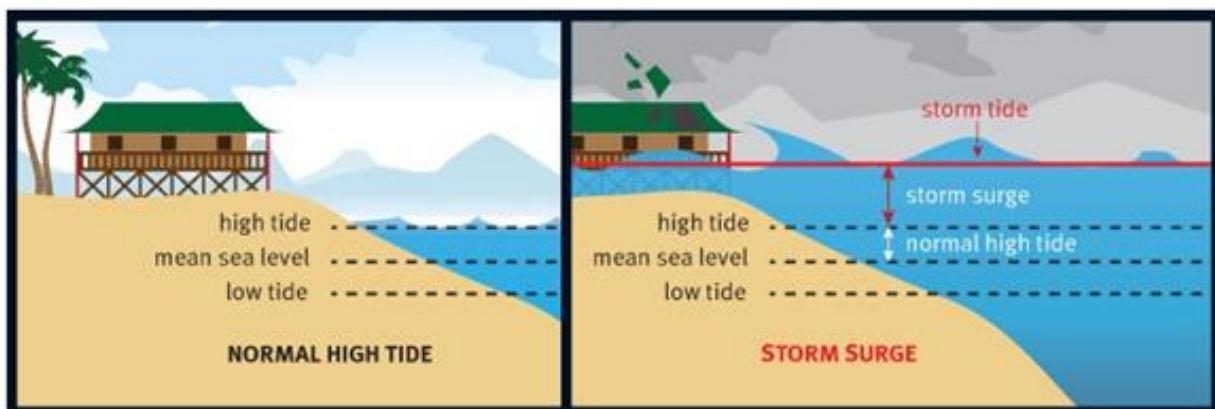
Storm surge

water rushing over the land

As a hurricane approaches land, its winds push ocean water against the shore

This causes flooding

Storm surges can wash away beaches and destroy buildings along the coast





http://www.nhc.noaa.gov/surge/animations/hurricane_stormsurge.swf

<http://www.nhc.noaa.gov/surge/animations/surgea.swf>
<http://www.nhc.noaa.gov/surge/animations/surgeb.swf>

<http://www.weatherwizkids.com/weather-hurricane.htm>

https://www.youtube.com/watch?v=s83bnlD_P4c

<https://www.youtube.com/watch?v=XTvkrLESrwU>

<https://www.youtube.com/watch?v=06AJkSD0HiU>
<http://www.livescience.com/22803-storm-surge-the-deadliest-part-of-a-hurricane-video.html>

Hurricane eye

a calm area of air at the center of a hurricane



A hurricane's energy

comes from the warm, moist air on the surface of the ocean

When a hurricane reaches land

it slows down and loses strength/power/energy

Damage caused by hurricanes

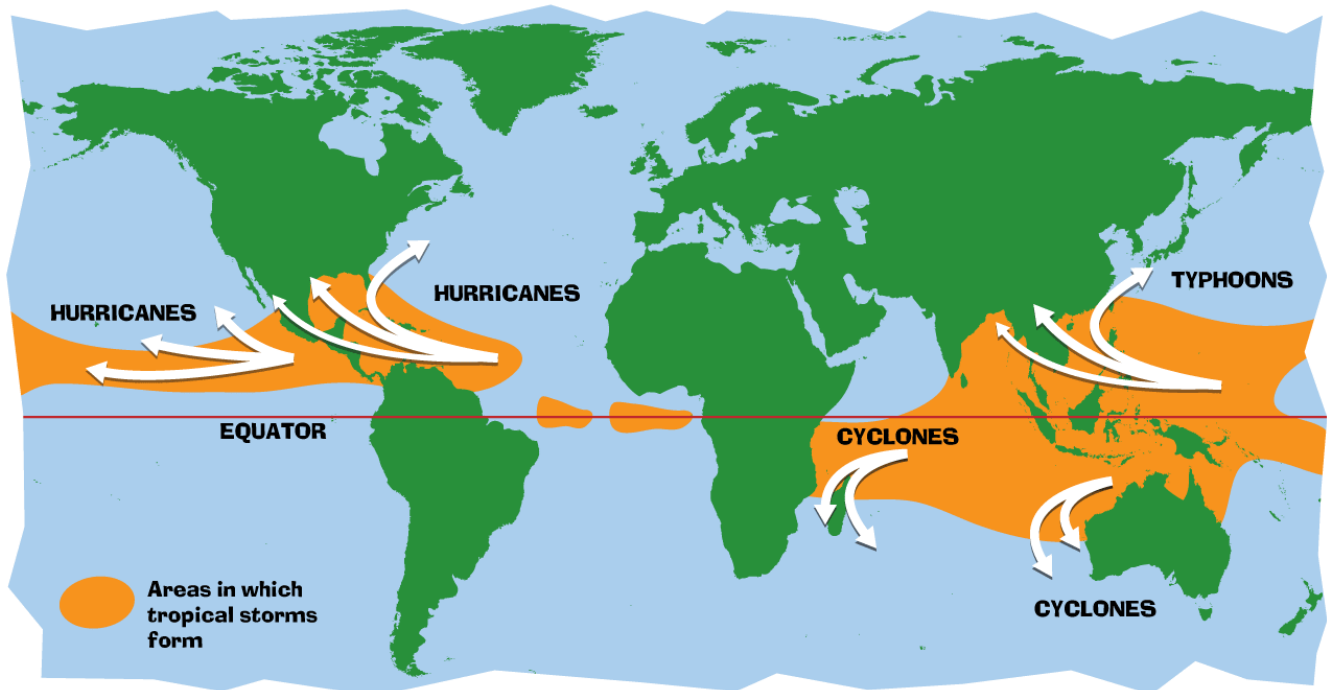
- pull up trees
- smash buildings
- destroy power lines
- heavy rains flood roads





Different names for hurricanes

- western Pacific Ocean = typhoon
- Indian Ocean = cyclone
- Atlantic Ocean/eastern Pacific Ocean = hurricane



Weather watches and warnings

announcements that are given for severe weather

They are announced on:

- television
- radio
- Internet

Weather watch

means severe weather is possible

If there is a severe weather watch, people should listen for more information

Weather warning

means severe weather has been seen

If there is a severe weather warning, people should go to a safe place

Most places use sirens to warn people of severe weather

Extreme Weather Check Your Understanding

Page 157

1. What is a tornado?

A tornado is _____ .

2. What are the four stages of hurricane development?

The four stages of hurricane development are _____ , _____ , _____ , and _____ .

3. What is the difference between a watch and a warning during severe weather conditions?

During severe weather conditions, the difference between a watch and a warning is a watch means

and a warning means

4. Is a funnel cloud dangerous? Explain your answer.

A funnel cloud _____ dangerous because
